

## Reinstatement of the genus *Kippistia* F. Muell. (Asteraceae, Astereae)

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### Abstract

Lander, Nicholas S. and Barry, Rhonda. Reinstatement of the genus *Kippistia* F. Muell. (Asteraceae, Astereae). *Nuytsia* 3, 2: 215–219 (1980).

The Australian monotypic genus *Kippistia* F. Muell., previously included under *Minuria* DC., is reinstated. Distinguishing features are presented and the single species, *K. suaedifolia*, is redescribed; nomenclatural notes and a distribution map are provided.

### Introduction

Mueller (1859) erected the monotypic genus *Kippistia* to accommodate specimens collected at Stuart Creek, South Australia on Babbage's Expedition. It was included under *Minuria* by Bentham (1867), a practice followed by all subsequent authors. Reconsideration of all available material of this taxon in connection with our recent study of *Minuria* (Lander & Barry, 1980) suggests that Mueller's genus *Kippistia* is deserving of reinstatement.

### Discussion

**Capitulum:** In *Minuria* capitula are heterochromous with yellow disc florets but with ray florets ranging in colour from white, through violet, mauve, lilac, lavender to pink and often quite variable in one species though never yellow. The capitula of *Kippistia* are homochromous with ray and disc florets uniformly and constantly yellow.

**Ray floret style:** The ray floret stigma lobes of all species of *Minuria* are subulate with conspicuously papillose stigmatic lines. The stigma lobes of the sterile ray florets in *Kippistia* are smooth and completely lack stigmatic lines.

**Ray achene:** Whereas ray achenes are invariably fertile in all species of *Minuria*, those of *Kippistia* are often sterile being flattened, translucent and without ovules, a feature noted also by Black (1929).

**Ray pappus:** In *Minuria* the ray pappi usually consist of many free, barbellate bristles. *M. denticulata* and *M. gardneri* have 7–10 such bristles per pappus. *M. denticulata*, *M. integerrima* and *M. rigida* have bristles which are increasingly more densely barbed towards their tips; those of other species are uniformly barbellate. In *M. macrocephala* the pappus consists of c. 35 tapering, capillary bristles often united in clumps.

In *Kippistia* the ray pappus is variable, consisting of many barbellate bristles either free to their bases or connate into a cup surmounted by a few bristles; the cup is sometimes elongated to form a distinctive tube.

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*Disc florets:* Tetramerous disc florets are found in *Minuria integerrima* (Davis, 1964; Lander & Barry, 1980) and have been observed in other genera of Astereae (Gardner, 1977; Grau, 1977). This character can also be observed in *Kippistia suaedifolia*.

*Disc achene:* Whereas disc achenes are sterile in *Minuria* or even absent altogether in one apomictic species, *M. integerrima* (Davis, 1964; Lander & Barry, 1980), they are swollen, opaque, contain ovules and are probably fertile in *Kippistia*.

*Disc pappus:* In *Minuria* there is considerable variation in the structure of disc pappi which, in general, consist of a mixture of shorter and longer, more or less free, barbellate bristles. In *M. annua* these shorter bristles are often united into fimbriate scales. In *M. integerrima* and *M. clippendalei* the shorter bristles are absent altogether or reduced to inconspicuous scales, a condition approached by *M. denticulata* where these shorter bristles are minute.

Two species of *Minuria* are quite exceptional. In *M. gardneri* the pappus consists of a cup of connate scales occasionally surmounted by one, rarely more (up to eight) bristles. In *M. macrocephala* the shorter disc pappus bristles are variable, being either capillary or else broad, barbellate and branching towards the apices into finer tips.

The disc pappus of *Kippistia* consists of a cup of short, more or less connate bristles surmounted by up to eight longer, barbed bristles thus approaching the condition found in *M. gardneri*. Rarely, all the bristles are united to form a tube making disc and ray pappi indistinguishable.

*Chemistry:* *Kippistia suaedifolia* is remarkable for its peculiar and strongly aromatic odour not found in any species of *Minuria*. The "... volatile oil obtained by steam distillation of the whole flowering plant ... contained, apart from very small amounts of other components, about 30% of limonene and 60% of perillyl acetate. The occurrence of limonene is unexceptional. However, perillyl acetate is a very uncommon natural product indeed. It occurs for instance in small amounts only in the oil of spearmint" (Lassak, pers. comm.). To date, the oils of *Minuria* species have not been examined.

*Affinities:* Despite the reliance placed on heterochromicity of the capitulum as a subtribal character by Bentham and Hooker (1873) and Hoffman (1889), *Kippistia* seems best placed in Asterinae (Heterochromeae Benth. & Hook.). We now know several genera which possess both homochromous and heterochromous heads including *Pentachaeta*, *Felicia*, *Mairia*, and *Machaeranthera* (Grau, 1977) and *Calotis* (Davis, 1952). Ray colour, therefore, while expressive of a trend within the tribe does not prevent us from retaining *Kippistia* in the Asterinae.

*Kippistia* is undoubtedly most closely related to *Minuria* and shares with it the woody perennial habit; the naked receptacle; two or more rows of ray florets; obtuse anther bases; dimorphic pappi—those of ray florets being markedly different in dimensions or morphology from those of the disc; and the single row of pappus hairs.

Further evidence to support the inclusion of *Kippistia* in the Asterinae comes from our observations on the disc styles which conform to those of the second type of sterile style described by Grau (1977) in which the disc stigma lobes are pubescent on their dorsal surfaces with patent or spreading uniseriate hairs which extend below the point of bifurcation. In the sub-tribe Asterinae these disc styles have previously been found only in the Australian genera *Calotis* and *Minuria*. The only other genus in the tribe Astereae in which such styles are found is another Australian genus, *Erodiophyllum*, in the sub-tribe Bellidinae Benth. & Hook.

### Diagnostic key to *Kippistia* and *Minuria*

1. Capitula homochromous with disc and ray florets both yellow; ray achenes often sterile; ray pappus of many barbellate bristles free to their bases or connate into a cup surmounted by a few bristles, sometimes elongated to form a tube; disc achenes fertile; plant strongly aromatic . . . . . ***Kippistia* F. Muell.**
- 1\*. Capitula heterochromous with disc florets yellow and rays white, blue, pink, mauve, etc.; ray achenes always fertile; ray pappus bristles never united to form a cup or tube; disc achenes sterile or absent altogether; plants not aro- or only slightly so . . . . . ***Minuria* DC.**

### Taxonomy

The name *Kippistia* honours Richard Kippist, librarian of the Linnean Society of London from 1840 to 1880.

***Kippistia* F. Muell., Rep. Bab. Exped. 12 (1859)**

*Type: K. suaedifolia* F. Muell.

***K. suaedifolia* F. Muell., l.c.; F. Mueller, Pl. Indig. Col. Victoria fig. 35 (1864–5).**

*Minuria suaedifolia* (F. Muell.) F. Muell. ex Benth., Fl. Austral. 3: 499 (1867); J. M. Black, Fl. South Australia Ed., 2, 858 (1957).—*Minuria kippistiana* F. Muell., Pl. Indig. Col. Victoria fig. 35 (1864–5) nom. pro. syn.—*Therogeron suaedifolia* (F. Muell.) Kuntze, Rev. Gen. 368–9 (1891).

*Neotype* (here designated): Streaky Bay to Venus Bay, *Babbage* MEL 70481, undated (MEL).

It has not been possible to locate the specimen originally cited by Mueller collected by Babbage at Stuart Creek. Mueller stated that “only a small fragment occurs amongst the plants of the expedition.”

A compact perennial shrub to 60 cm high, strongly aromatic. *Stems* woody, older ones sometimes gnarled, yellowish green to brown, glabrous. *Leaves* alternate, sessile, sometimes in clusters along old branches, linear, to 2.4 cm long, c. 0.5 mm wide, glabrous; apices apiculate to uncinat; margins entire. *Capitula* pedunculate, terminal, broadly conical, to 7 mm in diameter, homochromous. *Involucral bracts* in 3 rows, yellowish green, lanceolate, 2–3 mm long, c. 0.7 mm wide; margins of all rows membranous; apices acute, fimbriate, glabrous with a single prominent rib. *Receptacle* sharply convex, naked. *Ray florets* many in several rows, pistillate; ligules yellow, 0.8–1.8 mm long, 0.2–0.5 mm wide; floral tube 1.0–1.2 mm long; stigma lobes subulate, 0.3–0.7 mm long, glabrous; achenes both fertile and sterile, pale brown to yellow, linear in outline, 0.7–0.9 mm long, 0.2–0.3 mm wide, sparsely pubescent at base with notched twin-hairs; pappus of many barbellate bristles free to their bases or united to form a cup 1.2–1.4 mm long, surmounted by a few free hairs, rarely with all hairs united into a long tube. *Disc florets* hermaphrodite; floral tube 1.4–2.3 mm long; anthers 0.6–1.0 mm long, c. 0.2 mm wide with acute sterile apical appendages; stigma lobes subulate, 0.8–1.5 mm long, c. 0.2 mm wide, densely pubescent with adpressed, uniseriate hairs to just below the point of bifurcation; achene fertile, opaque, flattened, elliptical in outline, glabrous, 0.3–0.6 mm long, c. 0.3 mm wide; pappus consisting of a cup, of short more or less connate bristles 0.5–0.8 mm long, surmounted by up to 8 longer barbed bristles 1.5–1.8 mm long, rarely with all bristles united to form a tube.

*Flowering Period:* August to October.

*Habitat:* Occurs on a variety of soils usually around salt lakes and often in association with gypsum deposits.

*Distribution:* See map 1.

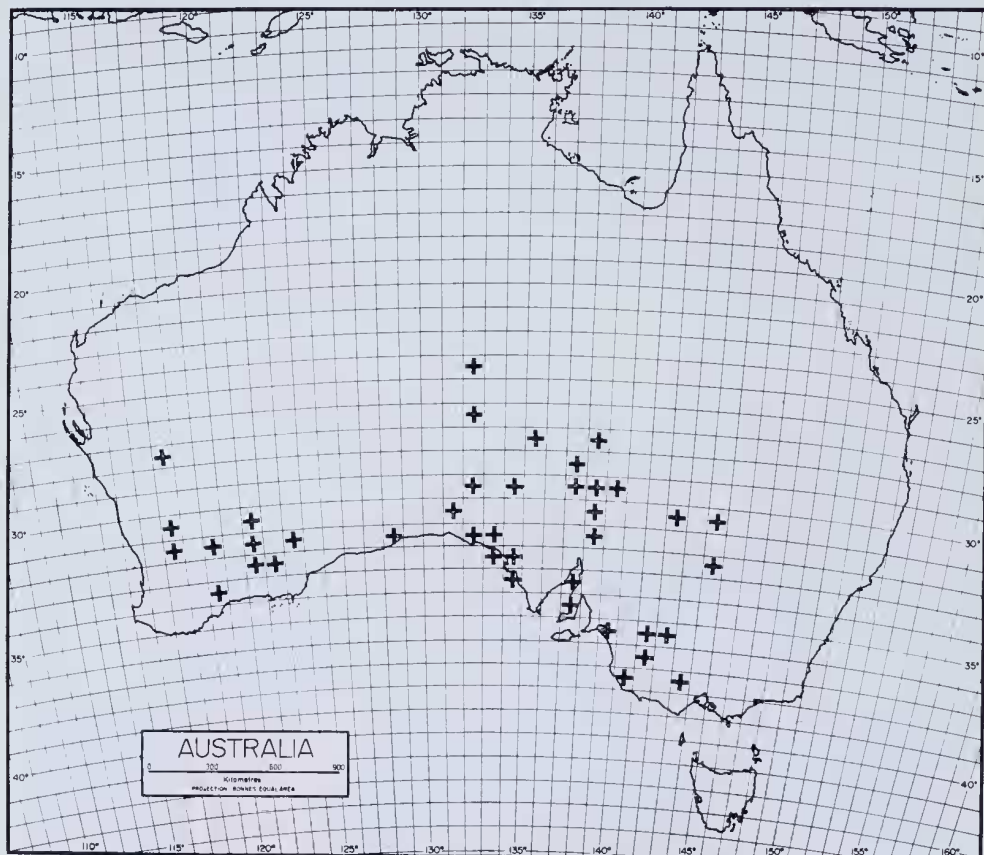


Figure 1. Distribution of *Kippistia suaedifolia* based on herbarium collections.

We have examined and annotated all available material of *Kippistia suaedifolia* from the following herbaria: AD, BRI, CANB, MEL, NSW, NT, and PERTH. The following list records only a few collections from each State. No attempt has been made to indicate the full range of variation by this list. All collections examined have been mapped by marking their occurrence in one degree squares superimposed on Bonnes Equal Area Projection of Australia.

*Selected Specimens:* NEW SOUTH WALES: Marlow Gypsum Mine, 22 km N of Conoble, *Pickard*, Aug. 1974 (NSW); NORTHERN TERRITORY: 13 km S of Wallera Range, *Latz* 4113, Aug. 1973 (AD); SOUTH AUSTRALIA: Mt Lyndhyrst, *Koch* 352, Oct. 1898 (BRI, MEL, NSW); VICTORIA: Sandhills N of Tempy, *Henshall* 596, Oct. 1967 (NT); WESTERN AUSTRALIA: Norseman, *Andrews*, Oct. 1903 (NSW, PERTH); 3 miles (5 km) N of Norseman on shore of Lake Cowan, *Phillips* CBG 015556, Sept. 1962 (CBG, NSW); Lake King, 33°05'S, 119°34'E, *Wilson* 7154, Aug. 1968 (NSW, PERTH).

The bulk of this work was completed while both authors were employed at the National Herbarium of New South Wales.

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